WATERLINES

News affecting the management and use of Indiana's water resources

DIVISION OF WATER
INDIANA DEPARTMENT OF NATURAL RESOURCES
FALL/WINTER 2003

2003 – WHAT A WET YEAR!

Hoosiers will certainly remember 2003 as a year that flooding took its toll. Thousands of Indiana residents suffered as a result of floods that occurred in July and September – some being impacted by both events.

In July, record floods occurred along Wildcat Creek, Deer Creek, the St. Marys River and the Iroquois River. The Wabash River in Adams and Wells counties reached near-record levels during the July flood event. In September, record flooding occurred along White Lick Creek in Hendricks and Morgan counties, and along Fall Creek in Indianapolis. The White River met up with the record flood on White Lick Creek. This combination produced the largest flood seen in Morgan County since March 1913.

Damages were so significant that President Bush authorized assistance under a major disaster declaration for both flood events. The assistance consisted of both grants and low-interest loans to individuals, as well as assistance to State and local governments for the repair or replacement of disaster-damaged facilities. In July, the declaration included 45 counties. More than $29.4 million in disaster assistance grants and low-interest loans were approved for Indiana residents in response to the July storms and flooding. The September declaration included 21 counties. More than $11.7 million in Federal/State disaster assistance was awarded as a result of the devastation caused by the September flooding.

The 2003 floods emphasize the importance of making sure new buildings in the floodplain are constructed to prevent damage; or even more significant, the importance of avoiding development of those areas that we know will flood. It is crucial for communities to learn from

Also in this issue

JOHN R. GOSS
Director, Department of Natural Resources

PAUL J. EHRET
Deputy Director, Department of Natural Resources

MICHAEL W. NEYER
Director, Division of Water

("What a Wet Year!" continued from page 1)

their experiences with flooding in 2003 in order to be better prepared for response and recovery when future floods occur.

At year's end, many flood victims were still trying to recover. Some victims were displaced for a short while, others have relocated, and yet others are still waiting as they anticipate potential buyouts of their properties. Sadly, some families are mourning, as four lives were lost as a result of flooding.

Flooding has caused the deaths of more than 10,000 people since 1900. Property damage from flooding now totals over $1 billion each year in the United States. Indiana had its share in 2003. ≈

TRAINING AVAILABLE FOR LOCAL OFFICIALS

The Federal Emergency Management Agency (FEMA) offers on-campus and correspondence courses through the Emergency Management Institute (EMI) in Emmitsburg, Maryland. The course, Managing Floodplain Development Through the National Flood Insurance Program (NFIP), is recommended for local officials responsible for administering local floodplain management ordinances, including but not limited to floodplain management administrators, building inspectors, code enforcement/zoning officers, planners, city/county managers, attorneys, engineers, and public works officials. Federal/state/regional floodplain managers are also encouraged to attend. For information, or course catalog, visit www.training.fema.gov, or call 800-238-3358. ≈

REMEDIATION OF FLOODPLAIN VIOLATIONS

(David Schein, FEMA, Region V, Chicago)

Much time is spent discussing how to correct violations of local floodplain ordinances. Communities participating in the National Flood Insurance Program (NFIP) are expected to deal aggressively with documented cases of these violations. Even the best of NFIP-compliant communities may have a violation of one sort or another.

The Federal Emergency Management Agency (FEMA) expects communities to 1) correct the violation to the maximum extent practicable and 2) correct any administrative deficiencies that may have led to the violation. The fact is that where violations exist, it is not uncommon to discover an oversight was made in administering the community's floodplain ordinance, rather than the builder failing to comply with its terms and conditions. This presents a dilemma.

If the builder violated the ordinance's requirements, it is a rather straightforward matter to bring an action, administrative or legal, to have the violation corrected. Ordinance penalty clauses and police powers are usually sufficient. But when the community officials have made the error, the universe of corrective actions available to the local official shrinks. The primary concern in these situations is that the violation be corrected. The community officials should take appropriate action to see that the correction is made.

Traditionally, courts have held that, in the normal course of doing business to protect the health, welfare, and safety, a community official who errs is generally held immune to legal action (provided no fraud, negligence, etc. is demonstrated). In other words, mistakes happen.

However, when the floodplain ordinance is ignored, the structure and its inhabitants end up in harm's way. The community and owner are left with a hard-to-market home or business, with inordinately high flood insurance premiums. In

("Remediation..." continued from page 2)

addition, the community is jeopardizing their participation in the NFIP. The community must pursue these violations with the same vigor it would tackle a violation caused by the builder.

How is the community to remedy such violations caused by its own failure? It should notify the owner of the violation and oversight. Then, it should meet with the owner and discuss remedial actions. FEMA and the State NFIP Coordinator can help with ideas for these negotiations. Naturally, the owner will be upset, and will not expect to pay for any remediation.

The community should investigate filing an "Errors and Omissions" claim with its liability insurance carrier. The oversight might be a covered circumstance. Regardless of how the costs of remediation are paid, the violation needs to be corrected. Even with Tort Immunity, the federal government and the National Flood Insurance Fund are exposed to liability for flood damage by the community's error.

All practicable remedies need to be explored to bring the violation into substantial compliance. This could even mean purchase of the structure by the community, and its removal or relocation. Obviously, the message here is "Don't fail to apply and enforce your floodplain ordinance!"

Unlike violations to other parts of the development code, when a structure is allowed to be built in violation of the floodplain rules, the violation is likely to be severe, such as the building being several feet too low, and remediation presents unique challenges. While elevating the structure to the flood protection elevation would provide the best protection, and probably make it fully compliant, it is also very problematic and expensive.

However, FEMA will recognize community efforts that achieve less than full compliance if the administrative deficiencies have been remedied and the structure is brought into substantial compliance. This can mean:

- The utilities are protected (often elevated or relocated);
- Floodwaters can be diverted from the structure (berming);
- Lower levels can be made "wet-floodproofed" and uninhabitable;
- Further improvements are prohibited;
- The structure has accurate actuarial rating for flood insurance (a current elevation certificate has been sent to FEMA);
- Some elevation or structural dry-floodproofing can be accomplished; and
- The violation is recorded on the deed or title.

These, taken together, are the minimum efforts FEMA wants to see a community implement in order to remedy floodplain violations to the maximum extent practicable. ≈

LENDER AND AGENT SEMINARS

For the latest information about Lender and Insurance Agent Seminars, visit http://www.fema.gov/nfip/wshops or call Rich Slevin, Marketing Manager for the National Flood Insurance Program (NFIP) at 630-577-1407. ≈

DID YOU KNOW?

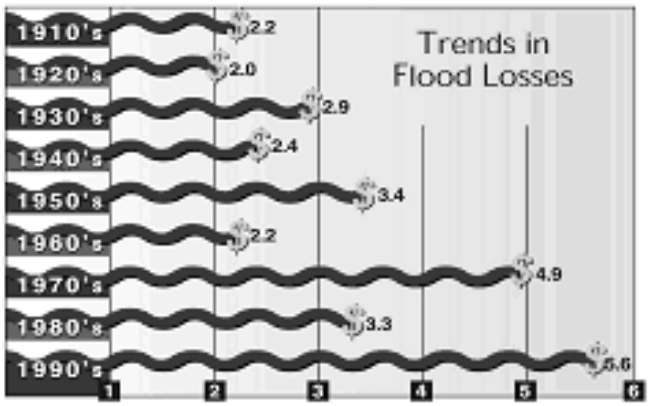
Floods are the most common natural disaster in the U.S., and nearly everybody has some risk of flooding. Virtually every U. S. state and territory has experienced floods. The Federal Emergency Management Agency (FEMA) estimates that 10 million U. S. households are located in high flood risk areas. ≈

NO ADVERSE IMPACT

Editor's note: This is a reprint of an article printed in the Illinois Association for Floodplain and Stormwater Management News. The article is taken from a draft of the forthcoming "No Adverse Impact Toolkit." Check the Web site of the Association of State Floodplain Managers to catch it when it comes out (www.floods.org).

Your community has a flood problem, and it isn't getting any better. You're not alone. Flood damage in the United States continues to escalate. From the early 1900s to the year 2000, flood damage in the United States has tripled, approaching $6 billion annually. This has occurred despite billions of dollars spent on flood control and other structural and non-structural measures.

Why is this happening? Because as a nation, we continue to build at risk on floodplains and to ignore the impacts of watershed development on other properties. Often, buildings, streets, utilities and other components of modern development that we thought were protected get flooded because of the actions of others.



Billions (adjusted to 1999 dollars)

What are we doing about it? Seventy years ago, we focused all our efforts on structural projects, such as levees, reservoirs and channelization, to control floodwaters. Forty years ago, we realized that this one-dimensional approach didn't do the job. We couldn't control Mother Nature, and we were just asking for more trouble by building in harm's way. Many developments in the watershed increased the amount of runoff flowing to our rivers, and developments in the floodplain obstructed flows or displaced areas needed for flood storage, making things worse.

In the 1960s, a more balanced strategy was instituted. We would look at both floodwater and the damage-prone development and try to manage both. This broader approach, which includes both structural and nonstructural measures, is known as "floodplain management." The nation's major floodplain management effort is the National Flood Insurance Program (NFIP), which maps floodplains and provides Federally backed flood insurance in return for local regulation of development in those mapped floodplains.

The NFIP has had an impact on the problem. New buildings are better protected from damage. The NFIP has slowed the increases in flood damage, but it has not stopped or reversed it. The reason is that most communities adopt and enforce only the minimum national and state floodplain management requirements, which focus on protecting new buildings, not what the impact of that construction will do to others.

The NFIP's minimum requirements are just that - minimums! The minimums set construction standards that often do not provide sufficient protection from local flood hazards. They allow floodwater conveyance areas to be reduced; essential valley storage to be filled; or velocities to be increased; all of which can adversely affect others in the floodplain and watershed.

The NFIP does have an incentive program, which does not require, but encourages, more effective local programs. The Community Rating System can reduce flood insurance premiums in communities with programs that exceed the NFIP's minimums. For more information on the CRS, see www.FEMA.gov/nfip/crs.shtm

By now, it should be clear that it is up to local officials to assume responsibility for their flood problems and floodplain management programs. That is where No Adverse Impact can help. "No Adverse Impact" (NAI) floodplain management is a managing principle developed by the Association of State Floodplain Managers (ASFPM) to address the shortcomings of the typical local floodplain management program. Rather than look at the minimum requirements of federal or state programs, NAI focuses on what communities can do that will actually protect property and prevent increased flooding, now and in the future.

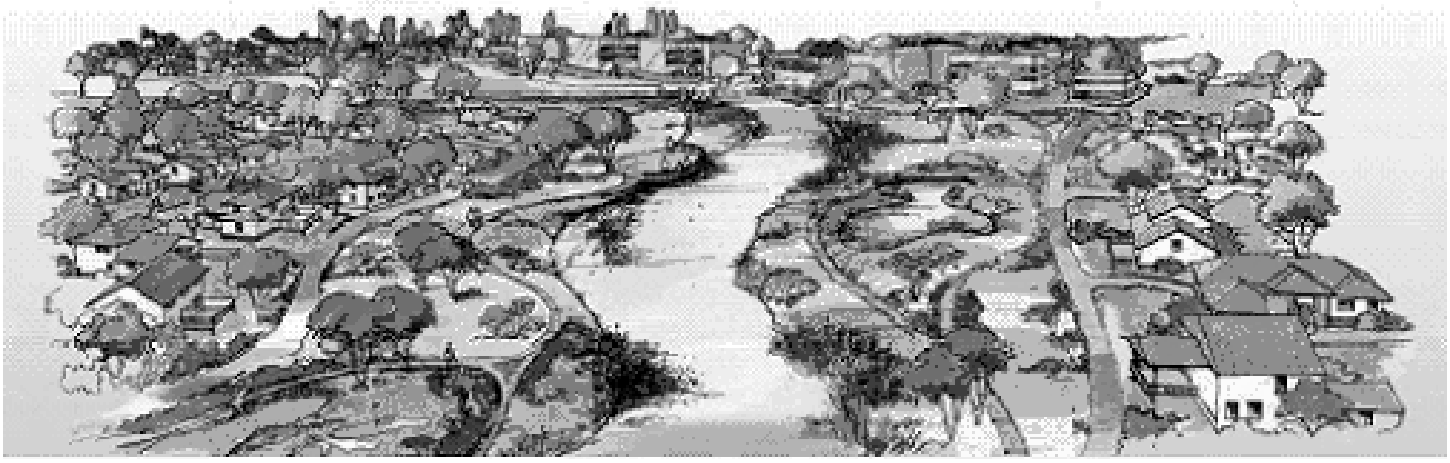
NAI floodplain management is an approach that ensures that the action of any community or property owner, public or private, does not adversely impact the property and rights of others. An adverse impact can be measured by an increase in flood stages, flood velocity, flows, the potential for erosion and sedimentation, degradation of water quality, or increased cost of public services. NAI does not mean "no development." It means that any adverse impact caused by a project must be mitigated, preferably as provided for in a community or watershed-based plan.

For local governments, NAI floodplain management represents a more effective way to tackle their flood problems. The concept offers communities a framework to design programs and standards that meet their true needs, not just the requirements of a federal or state government agency. The NAI floodplain management initiative empowers communities (and their citizens) to work with stakeholders and build a program that is effective in reducing and preventing everyone's flood problems. NAI floodplain management is about communities being proactive - understanding potential impacts and implementing prevention and mitigation activities before the impacts occur.

NAI has many benefits. By developing activities that really address your local situation and that do not harm others, your community can:

- Prevent flooding from increasing or from damaging others,
- See a reduction in flood losses over time,
- Avoid challenges and lawsuits over causing or aggravating a flood problem,
- Receive recognition for your efforts through the Community Rating System.

More information on NAI is available from ASFPM (www.floods.org or 608/274-0123).



DIGITAL GROUND WATER MAPS AND GIS COVERAGES NOW AVAILABLE ON-LINE

In response to a customer survey, the Indiana Department of Natural Resources Division of Water is providing new digital ground water mapping products. A new series of county maps showing aquifer systems are now available in various digital formats on the Division of Water Web site. Ten counties have been completed: Dubois, Brown, Pike, Martin, Monroe, Gibson, Daviess, Orange, Crawford, and Lawrence. Ultimately, all counties will be mapped so that a single, consistent map of the unconsolidated aquifer systems for all of Indiana will be available.

Each county has the following available: an unconsolidated aquifer system map, a bedrock aquifer system map, an extended text, and a table and general location of registered significant ground-water withdrawal facilities. Also included are other GIS shapefiles of pertinent features that are important to ground-water hydrology, such as: karst features, dye tracing in karst areas, and coal-mined areas (surface and underground).

To access these new products, visit the following Web site:
http://www.in.gov/dnr/water/ground_water/ground_water_assessment/index.html

---

PRECIPITATION REPORT FOR JULY THROUGH DECEMBER 2003

July 2003 will be remembered as the first of two very wet months in Indiana this year. Relentless and violent storms, which began on the 4th of July, caused record flooding in portions of northern Indiana. Record floods occurred along Wildcat Creek, Deer Creek, St. Marys River, and Iroquois River. Near- record flooding occurred along the Wabash River in Adams County and Wells County. Kokomo, Delphi, Alexandria, Bluffton, Decatur, the south side of Fort Wayne, and Ravenswood were hit particularly hard.

Because of the seemingly unending rain in White and Carroll counties, discharges from Oakdale Dam exceeded 10,000 cubic feet per second for a week. The last time the Tippecanoe River below Oakdale Dam experienced higher flooding was in April 1994. However, the continued volume of water for the one-week time period was most likely a record for the dam. Flooding quickly began in much of central and northern Indiana on the 5th of July. Because of the repeated rains, flooding continued for nearly a week along many small streams. The Wabash River in Lafayette was above flood stage for three weeks.

("Precipitation Report" continued from page 6)

August was a mix of stormy weather and dry spells. Above-normal rainfall continued in several areas of the state, while other areas were below normal. Even though there were periods of heavy localized rain, flooding problems were minor in comparison to July.

An unprecedented rain event occurred on the first day of September. Indianapolis received the most rain ever for a calendar day, breaking a record set 108 years ago. This 7.20-inch total surpassed the previous 6.8-inch record. Much of central Indiana received six to eight inches of rain on this day. The resulting floods were disastrous for much of central Indiana. The White River, in the southern portion of Marion County, crested that evening at near-major levels about nine hours after the end of the heavy rain. This was an incredible rise of 15 feet in just 18 hours. Many small streams in central Indiana flooded extensively, and some reached record levels. Record flooding occurred along White Lick Creek in Hendricks and Morgan counties and along Fall Creek in Indianapolis. The Speedway area saw its worst flooding since June 1957.

The rain ended by the second of September, and central Indiana remained nearly dry for over two weeks. When rains returned near the end of the month, it was enough to make September 2003 the wettest September of record and the tenth wettest month of record at Indianapolis.

October was a typical transitional month for autumn. Rainfall was close to normal in most of Indiana. Overall, streams and rivers were well within their banks, with flow slightly above normal for the end of October.

November was rather mild, but a little wet. Indiana experienced relatively dry conditions through the first 10 days of the month. Rainfall during the following 20 days more than made up for the dry start. Some lowland flooding affected some areas, primarily in Jackson County.

Hoosiers experienced relatively dry and mild conditions during most of December. Rainfall during the last few days of the month kept soils wet and rivers high. These conditions were only a prelude to a very wet period that would unfold during the early days of the new year.

KEY: ACTUAL (INCHES) / NORMAL (INCHES)

Locations	July	August	September	October	November	December	Totals 2003
CHICAGO	4.50	4.19	1.72	1.88	4.46	1.82	32.02
IL	3.51	4.62	3.27	2.71	3.01	2.43	36.27
SOUTH BEND	6.22	1.74	3.69	2.68	4.15	1.70	34.62
IN	3.73	3.98	3.79	3.27	3.39	3.09	39.70
FORT WAYNE	9.80	4.08	5.44	2.01	2.42	2.62	44.44
IN	3.58	3.60	2.81	2.63	2.98	2.77	36.55
INDIANAPOLIS	8.01	4.64	10.37	2.68	3.64	3.48	52.56
IN	4.42	3.82	2.88	2.76	3.61	3.03	40.95
EVANSVILLE	4.38	1.89	2.52	1.61	4.36	1.20	39.52
IN	3.75	3.14	2.43	2.78	4.18	3.54	43.71
LOUISVILLE	4.33	6.72	6.63	2.24	5.69	3.80	52.33
KY	4.30	3.41	3.05	2.79	3.81	3.69	44.54
CINCINNATI	5.00	4.80	5.07	2.11	3.92	2.26	42.90
OH	3.75	3.79	2.82	2.96	3.46	3.28	42.60

INDIANA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
402 WEST WASHINGTON STREET, ROOM W264
INDIANAPOLIS, INDIANA 46204-2641

The work that provides the basis for this publication was supported by funding under a cooperative agreement with the Federal Emergency Management Agency. The author and publisher are solely responsible for the accuracy of the statements, and interpretations contained in the publication. Such interpretations do not necessarily reflect the views of the Federal government.

THANK YOU

Thank you to those contributing to this issue of *Waterlines:* Dave Barnhill, Debbie Smith, Greg Main, Erin Hiatt-Tirmenstein, Judith Beaty, David Schein, and French Wetmore.

Editor - Anita Nance

Waterlines is published biannually as a public service by the Division of Water, Indiana Department of Natural Resources. The cooperation and assistance of the National Weather Service is gratefully acknowledged.

Waterlines is available free of charge to interested parties upon request. Call or write:

Division of Water
Indiana Department of Natural Resources
402 West Washington Street, Room W264
Indianapolis, Indiana 46204-2641
Phone: (317)232-4160
Toll free 1-877-WATER55

Waterlines* is also available on the Web at *www.IN.gov/dnr/water/publications/waterlines/